PAPI-C Original Notes

- components scoping planning and assignments
  - communication components
    - Completion semantics
      - How to handle latency discrepancies
    - Gemini prospects
  - PBS interface: e.g. time remaining, topology (David)
- API for managing perf_events throttling
  - If perf_events does throttling, user space needs to know
  - 100,000 / sec appears to be the limit
  - Can PAPI report the actual count at overflow?
  - Explore rates vs period specification (PAPI)
  - Investigate whether throttling is an issue (Rice)
- Perf_events support for other event types
  - Separate components or all events in CPU component
    - 1st implementation as separate compents
- Component module versioning and APIs
  - PAPIconfig shell script
    - Provide a mechanism to build a list of all LDLIBRARY path dependencies
    - Explore what kinds of info other configs export
- Something outside HPC to expand stakeholder base??
  - Sysadmins?
- PAPI as a tuning tool vs. PAPI as a reporting tool
  - Reporting “static” configuration parameters
- Overloading set/get opt to set and read parameters
- What kinds of performance feedback could be exported via a component
- Discuss with OFED people about eliminating write access requirement for PAPI component
- Identify key components to seed Repository to attract broader interest / wsupport
  - Juelich developing an external energy measurement component
  - MPIT component
- Paragraph to john & bart
PAPI-C @ CScADS 2010

Attendees:
Terpstra, Skinner, Geimer, Krentel
Basic PAPI Issues

• API for managing perf_events throttling?
  – If perf_events does throttling, user space needs to know
  – 100,000 samples / sec apparent limit
  – Can PAPI report actual count at overflow? (PAPI)
  – Explore rates vs period specification (PAPI)
  – Investigate whether throttling is an issue (Rice)

• Perf_events support for other event types
  – Separate components or all events in CPU component?
    • 1st implementation as separate components
PAPI-C

• Communication components (??)
• Component Completion semantics
  – How to handle latency discrepancies; timeouts (Skinner / PAPI)
  – Out-of-band counter measurement; remote daemons?
• Component module versioning and APIs
  – Geimer notes potential library path “hell” for a collection of components
  – PAPIconfig shell script (PAPI)
    • Provide a mechanism to build a list of all library path dependencies
    • Explore what kinds of info other config tools export
• PAPI as a tuning tool vs. PAPI as a reporting tool
  – Overloading set/get opt to set and read parameters
  – PAPI Components can do lots of things; which ones are appropriate?
• Discuss with OFED people about Infiniband write access requirement (Skinner)
PAPI-C

• Implement a Components Repository (PAPI)
• Identify key components to seed Repository and attract broader interest / support (all)
  – External energy measurement component (Juelich)
  – Gemini component: Cray has a proprietary interface; components as closed source? (Cray / PAPI)
  – PBS interface: e.g. time remaining, topology (Skinner)
  – MPIT component (Martin / OpenMPI / PAPI)
• Something outside HPC to expand stakeholder base??
  – Sysadmins?
  – Gamers?
  – Haskell?
    http://hackage.haskell.org/trac/ghc/wiki/Debugging/LowLevelProfiling/PAPI
• What kinds of dynamic performance feedback (for AutoTuning) could be exported via a component?
  – Topic for next week’s Session
  – Shirley to attend (PAPI)
Common Config File

- Can we agree on a common format xml configuration file?
  - Shared across multiple tools
  - Separate sections for each tool
  - Single point for tool configuration info